

Claims:

1. A method of controlling a base station, the base station coupled to a cellular network and a public switched telephone network (PSTN) to support a dual mode mobile telephone to provide both cellular service and cordless landline service, wherein the method
5 of controlling the base station comprises the steps of:

initially registering with the cellular network to receive operational information including base station operating frequencies and base station operating power levels that support user-selected service levels;

10 registering the mobile telephone to receive telephone service through the base station upon being detected by the mobile telephone, wherein the mobile telephone, while operating in a cellular mode and communicating via the cellular network, detects the base station using the base station operating power levels to recognize locations that are in proximity to the base station and searches for the base station using stored base station identification information when in proximity to the base
15 station, wherein the mobile telephone automatically de-registers with the cellular network upon detecting the base station;

receiving confirmation that the mobile telephone has automatically switched from providing cellular service to providing cordless landline service;

20 providing a call forwarding update message to the cellular network upon receiving the confirmation, the message requesting re-routing of calls addressed to the mobile telephone from the cellular network to the PSTN telephone number;

receiving a forwarded call addressed to the mobile telephone;

determining a status of the mobile telephone in response to the received call;

selecting a call information message in response to the status;
sending the call information message to the mobile telephone; and
transferring the forwarded call to the mobile telephone via a wireless link in
response to receipt of a user response to the call information message.

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2. The method of controlling a base station of claim 1, wherein registering the
mobile telephone further comprises the steps of:

receiving a mobile station identification number from the mobile telephone
which is received by the base station upon detection of the base station by the mobile
telephone;

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comparing the received mobile station identification number with a list of
mobile station identification numbers stored in the base station, wherein the mobile
station identification numbers of the list each correspond to mobile stations registered
with the base station; and

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processing communications from the mobile telephone in response to a match
between the received mobile station identification number and an entry of the list of
mobile station identification numbers resulting from the comparison.

3. The method of controlling a base station of claim 1, wherein the base station
further performs an initial registration of the mobile telephone, comprising the steps of:

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receiving a registration request message from the mobile telephone;

transmitting a registration receipt message to the mobile telephone in response to the registration request message, wherein the registration receipt message requests user confirmation of a desire to register with the base station;

5 receiving a registration acknowledge message from the mobile telephone in response to the registration receipt message, wherein the registration acknowledge message is an acceptance of the registration with the base station;

transmitting a registration accept message to the mobile telephone in response to the registration acknowledge message; and

storing a mobile station identification number of the mobile telephone.

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4. The method of controlling a base station of claim 1, wherein the base station further updates the operational information, comprising the steps of:

sending a status update message from the base station to the cellular network;

15 receiving a confirmation message from the cellular network when no update of the operational information is required;

receiving an authorization message from the cellular network when an update of the operational information is required.

20 5. The method of controlling a base station of claim 1, wherein the base station further collects and uses radio frequency (RF) interference data in selecting a communication frequency for use by the steps of:

storing a list comprising the base station operating frequencies and corresponding interference scores;

periodically measuring interference on each of the operating frequencies;

5 updating the interference scores of the list of frequencies in response to the periodic measurements of interference, wherein updating includes increasing an interference score by a first value if a corresponding interference measurement is above a first interference threshold and is below a second interference threshold, increasing the interference score by a second value that is greater than the first value if the corresponding interference measurement is above the second interference threshold, and decreasing the
10 interference score by a third value that is less than the first value if the interference measurement is below the first interference threshold; and

selecting a communication frequency for use from the list of frequencies, wherein said selected frequency has an interference score below a pre-specified threshold.

15 6. The method of controlling a base station of claim 1, wherein the base station communicates using time division multiplexed cellular communication channels including receive channels comprising the steps of:

receiving digital control channel information in a first time slot;

receiving data regarding a first digital traffic channel in a second time slot;

20 receives data regarding a second digital traffic channel in a third time slot; and

receiving interference information regarding potential interference on the cellular communications channel in a fourth time slot.

7. The method of controlling a base station of claim 1, wherein the base station communicates using time division multiplexed cellular communication channels including transmit channels comprising the steps of:

transmitting digital control channel information in a first time slot;

5 transmitting data regarding a first digital traffic channel in a second time slot;
and

transmitting data regarding a second digital traffic channel in a third time slot.

10 8. The method of controlling a base station of claim 1, wherein the call information message includes digital control channel information and calling number information when up to two mobile telephones are registered with the base station in a standby mode, wherein the call information message includes an alert message that rings the mobile telephones when more than two mobile telephones are registered with the base station in a standby mode.

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